Name of Organization: Michigan DEQ

Type of Organization: State

Contact Information: Ms. Ginny Pennala

Land and Water Management Division

184 US Highway 41 East

Negaunee MI 49866

Phone: (906) 475 - 2060 **Extension:**

Fax: (517) 241 - 8098

E-Mail: pennalav@state.mi.us

Project Title: Ecological Landscape Planning Through Wetland Restoration

Project Category: Habitat (Ecological) Protection and Rest

Rank by Organization (if applicable): 0

Total Funding Requested ($): 74,800 **Project Duration:** 2 Years

Abstract:

The City of Escanaba faces a challenge of balancing development pressures with the protection of the wetlands in its watershed. It is unique in having a large acreage of city-owned wetlands acquired for watershed protection. Yet these same wetlands are severely degraded by the presence of an aggressive exotic species, glossy buckthorn, combined with past filling and ditching. Wetland restoration is proposed as a means of effecting ecological landscape planning for the city. A demonstration project is proposed that would (1) assemble existing information on these municipal wetlands and identify information gaps, (2) develop bioassessment protocols through field work and apply it to selected wetlands, (3) assess selected wetlands for their potential for restoration, (4) identify and begin restoring a demonstration wetland site, and (5) set the stage for expanding this ecological planning/restoration model project.

Geographic Areas Affected by the Project

States:

- ☐ Illinois
- ☐ Indiana
- ☒ Michigan
- ☐ Minnesota
- ☐ New York
- ☐ Pennsylvania
- ☐ Wisconsin
- ☐ Ohio

Lakes:

- ☐ Superior
- ☐ Huron
- ☒ Michigan
- ☐ Erie
- ☐ Ontario
- ☐ All Lakes

Geographic Initiatives:

☐ Greater Chicago ☐ NE Ohio ☐ NW Indiana ☐ SE Michigan ☐ Lake St. Clair

Primary Affected Area of Concern: Not Applicable

Other Affected Areas of Concern: Potential to affect other states and Great Lakes basins as buckthorns (common and glossy) are a widespread problem in Great Lakes region wetlands. The species in present and a problem in Michigan, Wisconsin, Minnesota, Illinois, Indiana, Ohio, and New York and eastward to New England and the Maritimes.

For Habitat Projects Only:

Primary Affected Biodiversity Investment Area: Not Applicable

Other Affected Biodiversity Investment Areas: Target area was once the largest white cedar wetland west of the Straits of Mackinac with potential to harbor some unusual plant species and a wealth of wildlife including neotropical migrants.

Problem Statement:

We propose a demonstration project for sustainable development that integrates economic growth with conservation of biodiversity on public property through processes of landscape planning combined with wetland restoration. The City of Escanaba (Delta Co.) holds a mixture of uplands and wetlands for watershed protection. There are limited upland sites suitable for development. Current and future developers are faced with the need to wisely use existing uplands as well as the desire to sometimes fill wetlands. To address these issues, they need accurate information. This project involves several potential partners. The City is faced with pressures for development and with the need to balance development with watershed protection. A private regional environmental consulting firm with extensive expertise in ecological sciences is interested in both assembling bioassessments for city-owned wetlands and in restoration of biodiversity in the wetlands. The Michigan Department of Agriculture (MDA) is interested in control of invasive exotics. Over all, the Michigan Department of Environmental Quality is interested facilitating a demonstration project that begins the process of integrating ecological landscape planning and development planning with respect to wetlands, and investigates the feasibility of wetland restoration as a mitigation tool. Such a project could also include involvement by \other federal agencies such as NOAA (CZM), USACE, and USFWS. This project is a natural meeting ground for state and federal agencies, a municipality, development firms, and a consulting firm in a public-private partnership.

The extensive Escanaba wetland area is almost entirely taken over by the aggressive exotic species, glossy buckthorn. This shrub essentially creates a "biological desert" by preventing other plant species from establishing and persisting. The faunal diversity is likewise severely impacted. Glossy buckthorn can completely dominate a wetland in a relatively short span of time, reducing biodiversity and adversely affecting ecological functionality. The first reported location for its occurrence in Michigan was in Delta County where today the Escanaba coastal plain wetland is completely dominated by buckthorn. According to maps reconstructed from GLO notes, this area once held the largest white cedar wetland in Michigan west of the Straits of Mackinac. The City of Escanaba holds nearly 2,000 acres of degraded wetland for water quality protection, yet is realizing only a fraction of their potential functions and values. Development pressures in the area threaten further degradation. A restoration approach is needed to create a plan and method of effecting sustainable community development that not only preserves, but actually enhances, the functions and values of the area's wetlands.

This demonstration project would begin with preliminary ecological landscape assessment, followed by restoration of a small demonstration site. Ecological landscape planning will involve identification of reference sites and bioassessment of selected areas of city-owned wetlands to help scientists identify the attributes of the degraded wetlands to be restored. At the demonstration site we will use chemical control of glossy buckthorn combined with hydrological and vegetative restoration to create a restored multi-habitat wetland mosaic that can be used as an enhancement for neighboring businesses, an outdoor laboratory for schools, a tourist attraction and an avenue for public education about wetlands. The

demonstration site will be available for public access so that it might be used as a "wetland park" and thus serve to promote a sustainable planning process in the community that values natural habitats. In addition, the increased functionality of the wetlands will have positive repercussions on local watersheds associated with these wetlands (Escanaba River, Ford River, Willow Creek, Portage Creek) that enter the Lake Michigan basin in terms of exotic control, wildlife enhancement, water quality protection, and human recreational use.

Proposed Work Outcome:

This proposed demonstration project would begin with basic ecological landscape assessment and planning with respect to wetlands, followed by selection and restoration of a small demonstration site. This project is intended potentially to serve as a beginning for a larger and more formal advance wetland planning and restoration project. It has potential to develop exportable methods and approaches that can be used to facilitate sustainable development and re-establish functionality in other similarly degraded wetlands in the Great Lakes region. This project has potential to complement other EPA programs such as Advance Identification (ADID) and Wetland Bioassessment Process.

A first step of the project will involve a landscape level collection of existing background information in the forms of maps, photos, oral and written knowledge, and documents. This information gathering will be used to locate and assemble data from local, State, and Federal sources. Possible data sources include aerial photos, digitized land use maps, NWI maps, etc. It will also identify information gaps and future needs. In addition, the landscape level information gathering will involve identifying wetlands that can be used as reference sites for proposed assessment, restoration, and monitoring of wetlands. GIS technology may be used for databasing and analysis as appropriate, or at least data sources that can become part of a GIS will be identified. The focus of this background investigation will be on the interplay of wetlands and developable land.

Once background information is assembled, selected portions of the city-owned wetlands and reference wetlands (substantively unaltered) will be chosen for field bioassessments. These ecological assessments, conducted by experienced field biologists, will assess the current functions and values of wetland areas addressing components such as hydrology, soil, water chemistry, invertebrates, amphibians and reptiles, birds, mammals, and vascular plants. Reference wetlands will be assessed using the same protocol. These same assessed qualities can be used in developing a quality assurance/quality control protocol to evaluate the performance of the core restoration site. They will also lay the groundwork for more rigorous assessment protocols in the future such as indicators of biological integrity, should a more quantitative approach be desired in the future.

Selected wetlands will be assessed relative to ecological (hydrological and biological) functions and values to determine potentials for restoration. Potential for restoration will take into account ecological potential as well as cost effectiveness. Wetlands might be determined to have, for example, low, medium, or high potential for effective restoration. Such assessments might be useful in the regulatory process. Some wetland areas may be so severely degraded that it is not cost effective or scientifically feasible to restore or rehabilitate them. Other wetlands may not hold potential for full restoration, but could have some functions restored and be valuable in a business setting as green space and for stormwater runoff management. Other sites may have high potential for an eventual full restoration, for example to a white cedar wetland.

From this assessment procedure, a small demonstration site for restoration (5 - 10 acres) will be chosen (a larger site might be undertaken if more partners are identified). A site-specific plan will be devised for the restoration site that includes a wetland mosaic of habitats once present in the Escanaba wetland. Potential habitats include white cedar, wet meadow, lowland shrub, and emergent wetlands. Initial restoration procedures will include detailed mapping of the site, chemical control of buckthorn, native plantings, and possibly hydrology restoration through shallow excavation. Planning can also occur for eventual public and educational access. Initial post-restoration monitoring would be implemented and additional needed restoration actions identified for future work.

To recap, the outcome of the proposed demonstration project will be a compilation of existing information for the larger wetland landscape around Escanaba to identify information sources and needs, development of a bioassessment protocol that might evaluate wetlands for their restoration potential, and a core demonstration restoration site that explores the feasibility of using a combination of exotic removal and control combined with vegetative and hydrological restoration to create a wetland with enhanced functionality that can be considered for its mitigation potential. The project will begin a significant reduction in the population of an aggressive exotic species on the landscape and reduce its potential for spread. A successfully restored wetland can be used to educate the public about the benefits of a healthy functioning wetland. Currently the impression of wetlands in the Escanaba area is almost unremittingly negative due to their degraded nature

and chronic regulatory conflicts. Future project phases could expand the baseline information database for the landscape and increase its usefulness for analysis, continue field bioassessment of wetland areas (perhaps making it more quantitative), and expand the spatial and temporal scope of the restoration effort. Eventually this project could expand to become an advance wetland planning process.

The project also aspires to develop an "exportable project" in at least two ways: (1) through initiating the development of a demonstration field protocol that can be used to re-establish functionality in other similarly degraded wetlands in the Great Lakes region through bioassessment combined with vegetation and hydrology restoration and (2) through development of a model demonstration project that can be used to integrate urban planning development with wetland restoration and mitigation, and can be used as a springboard for more formalr and larger scale efforts.

Project Milestones:	**Dates:**
Background Information Gathering	09/2000
Research on Bioassessment Protocols	11/2000
Analysis of Available Information	02/2001
Identification of Assessment Areas	04/2001
Field Bioassessments and Rankings	06/2001
Begin Restoration on Demonstration Site	07/2001
Continue Restoration Activities	05/2002
Conduct Post Restoration Monitoring	06/2002

☒ Project Addresses Environmental Justice

If So, Description of How:

The project is located in the Upper Peninsula of Michigan much of which has high unemployment. Escanaba is within a historically underutilized business zone (HUBZone).

☒ Project Addresses Education/Outreach

If So, Description of How:

The proposed demonstration restoration site, as well as future restored wetland areas, are proposed for use by the public as a wetland interpretive park and by local schools (elementary through community college) as an outdoor laboratory.

The demonstration restoration wetland will serve has a concrete way to educate the public about the values of wetlands and the need to consider them in a planning process. By restoring a wetland so that it is more aesthetically pleasing and by eventually providing interpretive opportunities, the citizens in the Escanaba area can come to appreciate this natural resource. An expanding restored "wetland park" might even become a tourist attraction - a place for people heading west from the Straits of Mackinac to stop and visit a wetland that illuminates the diversity of northern Great Lakes wetlands. With its location so near Lake Michigan (within 1/2 to 2 miles), a restored wetland is expected to act as a magnet for migratory songbirds and waterfowl. A restored wetland landscape could very well become a tourist draw for birdwatchers. Restored wet meadows can likewise show nature enthusiasts a variety of native sedges, grasses, and flowering forbs. For example, a showy species like the tall, Angelica purpurea, unusual this far north, occurs in the landscape and could be re-established in appropriate microsites in a restoration wetland.

In addition, the bioassessment and restoration protocols will be available to other parties who wish to assess wetlands for restoration potential. Protocols will be particularly valuable for parties faced with buckthorn-degraded wetlands although they will have general applicability to other degraded wetlands as well.

Project Budget:

	Federal Share Requested ($)	Applicant's Share ($)
Personnel:	3,000	500
Fringe:	0	0
Travel:	2,000	0
Equipment:	2,000	9,500
Supplies:	6,000	7,000
Contracts:	40,800	6,000
Construction:	14,000	0
Other:	7,000	0
Total Direct Costs:	74,800	23,000
Indirect Costs:	0	0
Total:	74,800	23,000
Projected Income:	0	0

Funding by Other Organizations (Names, Amounts, Description of Commitments):

Over 5% matching will be provided through in-kind contributions of the current collaborators. The proposed project will begin with matching in-kind contributions from two private companies, the City of Escanaba, and Michigan Department of Agriculture. Willow Creek Development has agreed to donate to the project findings from their contracted feasibility research on exotic control and wetland restoration conducted by White Water Associates, Inc. (value $6,000) White Water Associates, Inc. will be providing in-kind contributions of use of their reference library and use of field sampling equipment (value $2000). The City of Escanaba will provide substantial in-kind contribution of technical staff assistance, the use of its information base including maps and aerial photos and computer databases as well as the use of specific acreage for the restoration project (value $10,000). The Michigan Department of Agriculture has indicated in-kind technical support regarding control of exotics through personnel at their Escanaba field office ($500).

Other funds will be sought for the project as the project progresses. Possibilities include other local outdoors clubs, State agency funds, NRCS, and other federal grants such as Coastal Zone Management funds. This project addresses watershed issues, exotic control, Great Lakes wetlands, recreational development, tourism, sustainable development, and habitat restoration. Funds will be sought relevant to these aspects.

Funding is sought from the GLNPO since the work needed to plan a demonstration project of this scope and develop protocols with public benefit fall outside the scope of private enterprise and beyond the budget of a small city. The project is intended to engender interest and support so that the entire planning, assessment, and restoration project can be expanded in the future.

Description of Collaboration/Community Based Support:

Preliminary project design has been an ongoing collaboration among a development firm (Willow Creek Development), an independent ecological consulting firm (White Water Associates, Inc.), the City of Escanaba, the Michigan Department of Environmental Quality, and the Michigan Department of Agriculture. Information generated during the project will become part of a municipal data source that can be continually updated and used in making decisions about development and restoration. The demonstration restoration site is proposed for municipal land that would be available for public access upon completion of restoration.